the resolution of the test instrumentation. Calculations shall be rounded off to the same number of significant digits as the previous step. The final water consumption value shall be rounded to one decimal place.

b. The test apparatus and instructions for testing urinals shall conform to the requirements specified in section 8.2, Test Apparatus and General Requirements, subsections 8.2.1, 8.2.2, and 8.2.3 of the ASME/ANSI Standard A112.19.6–1995 (see § 430.22). Measurements shall be recorded at the resolution of the test instrumentation. Calculations shall be rounded off to the same number of significant digits as the previous step. The final water consumption value shall be rounded to one decimal place.

3. *Test Measurement:*

a. Water closets—The measurement of the water flush volume for water closets, expressed in gallons per flush (gpf) and liters per flush (Lpf), shall be conducted in accordance with the test requirements specified in section 7.1.6, Water Consumption and Hydraulic Characteristics, of the ASME/ANSI Standard A112.19.6–1995 (see § 430.22).

b. Urinals—The measurement of water flush volume for urinals, expressed in gallons per flush (gpf) and liters per flush (Lpf), shall be conducted in accordance with the test requirements specified in section 8.5, Water Consumption, of the ASME/ANSI Standard A112.19.6–1995 (see § 430.22).

[63 FR 13317, Mar. 18, 1998]

Subpart C—Energy and Water Conservation Standards

§ 430.31 Purpose and scope.

This subpart contains energy conservation standards and water conservation standards (in the case of faucets, showerheads, water closets, and urinals) for classes of covered products that are required to be administered by the Department of Energy pursuant to the Energy Conservation Program for Consumer Products Other Than Automobiles under the Energy Policy and Conservation Act, as amended (42 U.S.C. 6291 *et seq.*). Basic models of covered products manufactured before the date on which an amended energy conservation standard or water conservation standard (in the case of faucets, showerheads, water closets, and urinals) becomes effective (or revisions of such models that are manufactured after such date and have the same energy efficiency, energy use characteristics, or water use characteristics (in the case of faucets, showerheads, water closets, and urinals), that comply with the energy conservation standard or water conservation standard (in the case of faucets, showerheads, water closets, and urinals) applicable to such covered products on the day before such date shall be deemed to comply with the amended energy conservation standard or water conservation standard (in the case of faucets, showerheads, water closets, and urinals).

[63 FR 13317, Mar. 18, 1998]

§ 430.32 Energy and water conservation standards and effective dates.

The energy and water (in the case of faucets, showerheads, water closets, and urinals) conservation standards for the covered product classes are:

(a) *Refrigerators/refrigerator-freezers/freezers.* These standards do not apply to refrigerators and refrigerator-freezers with total refrigerated volume exceeding 39 cubic feet or freezers with total refrigerated volume exceeding 30 cubic feet.

Product class	Energy standards equations (Kwh/yr) Effective dates	
	January 1, 1990	January 1, 1993
1. Refrigerators and Refrigerator-Freezers with manual defrost	(16.3AV+316)	(13.5AV+299)
2. Refrigerator-Freezer—partial automatic defrost	(21.8AV+429)	(10.4AV+398)
3. Refrigerator-Freezers—automatic defrost with: Top-mounted freezer without through-the-door ice service [1]	(23.5AV+471)	(16.0AV+355)
4. Refrigerator-Freezers—automatic defrost with: Side-mounted freezer without through-the-door ice service	(27.7AV+488)	(11.8AV+501)
5. Refrigerator-Freezers—automatic defrost with: Bottom-mounted freezer without through-the-door ice service	(27.7AV+488)	(16.5AV+367)
6. Refrigerator-Freezers—automatic defrost with: Top-mounted freezer with through-the-door ice service	(26.4AV+535)	(17.6AV+391)
7. Refrigerator-Freezers—automatic defrost with: Side-mounted freezer with through-the-door ice service	(30.9AV+547)	(16.3AV+527)
8. Upright Freezers with: Manual defrost	(10.9AV+422)	(10.3AV+264)
9. Upright Freezers with: Automatic defrost	(16.0AV+623)	(14.9AV+391)

Product class	Energy standards equations (Kwh/yr) Effective dates	
	January 1, 1990	January 1, 1993
10. Chest Freezers and all other Freezers	(14.8AV+223)	(11.0AV+160)

[1] Including all refrigerators with automatic defrost
AV=Total adjusted volume, expressed in Ft.[3], as determined in Appendices A1 and B1 of Subpart B of this Part.

(b) *Room air conditioners.*

Product class	Energy efficiency ratio Jan. 1, 1990
1. Without reverse cycle and with louvered sides less than 6,000 Btu	8.0
2. Without reverse cycle and with louvered sides 6,000 to 7,999 Btu	8.5.
3. Without reverse cycle and with louvered sides 8,000 to 13,999 Btu	9.0
4. Without reverse cycle and with louvered sides 14,000 to 19,999 Btu	8.8
5. Without reverse cycle and with louvered sides 20,000 and more Btu	8.2
6. Without reverse cycle and without louvered sides Less than 6,000 Btu	8.0
7. Without reverse cycle and without louvered sides 6,000 to 7,999 Btu	8.5
8. Without reverse cycle and without louvered sides 8,000 to 13,999 Btu	8.5
9. Without reverse cycle and without louvered sides 14,000 to 19,999 Btu	8.5
10. Without reverse cycle and without louvered sides 20,000 and more Btu	8.2
11. With reverse cycle, and with louvered sides	8.5
12. With reverse cycle, without louvered sides	8.0

(c) *Central air conditioners and central air conditioning heat pumps.*

Product class	Seasonal energy efficiency ratio	Heating seasonal performance factor	Effective date
1. Split systems	10.0	6.8	01/01/92
2. Single package systems	9.7	6.6	01/01/93

(d) *Water heaters.*

The energy factor of water heaters shall not be less than the following products manufactured on or after the indicated dates:

Product class	Energy factor, as of Jan. 1, 1990	Energy factor, as of April 15, 1991
1. Gas Water Heater.	0.62 − (.0019 × Rated Storage Volume in gallons).	0.62 − (.0019 × Rated Storage Volume in gallons).
2. Oil Water Heater.	0.59 − (.0019 × Rated Storage Volume in gallons).	0.59 − (.0019 × Rated Storage Volume in gallons).
3. Electric Water Heater.	0.95 − (.00132 × Rated Storage Volume in gallons).	0.93 − (.00132 × Rated Volume Storage in gallons).

Note: Rated Storage Volume=the water storage capacity of a water heater, in gallons, as specified by the manufacturer.

(e) *Furnaces*

Product class	AFUE [1] (percent)	Effective date
1. Furnaces (excluding classes noted below) (percent)	78	01/01/92
2. Mobile Home Furnaces (percent)	75	09/01/90
3. Small furnaces (other than furnaces designed solely for installation in mobile homes) having an input rate of less than 45,000 Btu/hr		
(A) Weatherized (outdoor)	78	01/01/92
(B) Non-weatherized (indoor)	78	01/01/92
4. Boilers (excluding gas steam) (percent)	80	01/01/92
5. Gas steam boilers (percent)	75	01/01/92

[1] Annual Fuel Utilization Efficiency, as determined in § 430.22(n)(2) of this part.

(f) *Dishwashers.* (1) Dishwashers manufactured between January 1, 1988, and May 14 1994 shall be equipped with an option to dry without heat.

(2) Dishwashers manufactured on or after May 14, 1994, shall have an energy factor no less than:

Product class	Energy factor (cycles/KWh)
i. Compact Dishwasher (less than 22 inches in exterior width)	0.62
ii. Standard Dishwasher (equal to or greater than 22 inches in exterior width)	0.46

(g) *Clothes washers.* (1) Clothes washers manufactured between January 1, 1988, and May 14, 1994, shall include an unheated rinse water option.

(2) Clothes washers manufactured on or after May 14, 1994, shall have an energy factor no less than:

Product class	Energy factor (cu. ft./Kwh/cycle)
i. Top Loading, Compact (less than 1.6 ft.[3] capacity).	0.90.
ii. Top Loading, Standard (1.6 ft.[3] or greater capacity).	1.18.

Product class	Energy factor (cu. ft./Kwh/cycle)
iii. Top Loading, Semi-Automatic ..	Not Applicable.[1]
iv. Front Loading	Not Applicable.[1]
v. Suds saving	Not Applicable.[1]

[1] These classes shall have an unheated rinse water option.

(h) *Clothes dryers.* (1) Gas clothes dryers manufactured between January 1, 1988, and May 14, 1994, shall not be equipped with a constant burning pilot.

(2) Clothes dryers manufactured on or after May 14, 1994, shall have an energy factor no less than;

Product class	Energy factor (lbs/KWh)
i. Electric, Standard (4.4 ft^3 or greater capacity)	3.01
ii. Electric, Compact (120v) (less than 4.4 ft^3 capacity)	3.13
iii. Electric, Compact (240v) (less than 4.4 ft^3 capacity)	2.90
iv. Gas	2.67

(i) *Direct heating equipment.*

Product class	Annual fuel utilization efficiency, Jan. 1, 1990 (percent)
1. Gas wall fan type up to 42,000 Btu/hour	73
2. Gas wall fan type over 42,000 Btu/hour	74
3. Gas wall gravity type up to 10,000 Btu/hour	59
4. Gas wall gravity type over 10,000 Btu/hour up to 12,000 Btu/hour	60
5. Gas wall gravity type over 12,000 Btu/hour up to 15,000 Btu/hour	61
6. Gas wall gravity type over 15,000 Btu/hour up to 19,000 Btu/hour	62
7. Gas wall gravity type over 19,000 Btu/hour up to 27,000 Btu/hour	63
8. Gas wall gravity type over 27,000 Btu/hour up to 46,000 Btu/hour	64
9. Gas wall gravity type over 46,000 Btu/hour ..	65
10. Gas floor up to 37,000 Btu/hour	56
11. Gas floor over 37,000 Btu/hour	57
12. Gas room up to 18,000 Btu/hour	57
13. Gas room over 18,000 Btu/hour up to 20,000 Btu/hour	58
14. Gas room over 20,000 Btu/hour up to 27,000 Btu/hour	63
15. Gas room over 27,000 Btu/hour up to 46,000 Btu/hour	64
16. Gas room over 46,000 Btu/hour	65

(j) *Cooking Products.* Gas cooking products with an electrical supply cord shall not be equipped with a constant burning pilot light. This standard is effective on January 1, 1990.

(k) *Pool heaters.* The thermal efficiency of pool heaters must be no less than 78%. The standard is effective on January 1, 1990.

(l) *Television sets.* [Reserved]

(m) *Fluorescent lamp ballasts.* (1) Except as provided in paragraph (m)(2) of this section, each fluorescent lamp ballast—

(i)(A) Manufactured on or after January 1, 1990;

(B) Sold by the manufacturer on or after April 1, 1990; or

(C) Incorporated into a luminarie by a luminarie manufacturer on or after April 1, 1991; and

(ii) Designed—

(A) To operate at nominal input voltages of 120 or 277 volts;

(B) To operate with an input current frequency of 60 Hertz; and

(C) For use in connection with F40T12, F96T12, or F96T12HO lamps; shall have a power factor of 0.90 or greater and shall have a ballast efficacy factor not less than the following:

Application for operation of	Ballast input voltage	Total nominal lamp watts	Ballast efficacy factor
One F40T12 lamp	120	40	1.805
	277	40	1.805
Two F40T12 lamps	120	80	1.060
	277	80	1.050
Two F9T12 lamps	120	150	0.570
	277	150	0.570
Two F96T12HO lamps	120	220	0.390
	277	220	0.390

(2) The standards described in paragraph (m)(1) of this section do not apply to (i) a ballast which is designed for dimming or for use in ambient temperatures of 0°F or less, or (ii) a ballast which has a power factor of less than 0.90 and is designed for use only in residential building applications.

(n) *General service fluorescent lamps and incandescent reflector lamps.* (1) Each of the following general service fluorescent lamps manufactured after the effective dates specified in the table shall meet or exceed the lamp efficacy and CRI standards shown in the table below:

FLUORESCENT LAMPS

Lamp type	Nominal lamp wattage	Minimum CRI	Minimum average lamp efficacy (LPW)	Effective date
4-foot medium bi-pin	gt;35W	69	75.0	Nov. 1, 1995.
	≤35W	45	75.0	Nov. 1, 1995.
2-foot U-shaped	gt;35W	69	68.0	Nov. 1, 1995.
	≤35W	45	64.0	Nov. 1, 1995.
8-foot slimline	gt;65W	69	80.0	May 1, 1994.
	≤65W	45	80.0	May 1, 1994.
8-foot high output	gt;100W	69	80.0	May 1, 1994.
	≤100W	45	80.0	May 1, 1994.

(2) Each of the following incandescent reflector lamps manufactured after November 1, 1995, shall meet or exceed the lamp efficacy standards shown in the table in this paragraph:

INCANDESCENT REFLECTOR LAMPS

Nominal lamp wattage	Minimum average lamp efficacy (LPW)
40–50	10.5
51–66	11.0
67–85	12.5
86–115	14.0
116–155	14.5
156–205	15.0

(o) *Faucets.* The maximum water use allowed for any of the following faucets manufactured after January 1, 1994, when measured at a flowing water pressure of 60 pounds per square inch (414 kilopascals), shall be as follows:

Faucet type	Maximum flow rate (gpm (L/min)) or (gal/cycle (L/cycle))
Lavatory faucets	2.2 gpm (8.3 L/min)[1,2]
Lavatory replacement aerators.	2.2 gpm (8.3 L/min)
Kitchen faucets	2.2 gpm (8.3 L/min)
Kitchen replacement aerators.	2.2 gpm (8.3 L/min)
Metering faucets	0.25 gal/cycle (0.95 L/cycle)[3,4]

Note:

[1] Sprayheads with independently-controlled orifices and manual controls.

The maximum flow rate of each orifice that manually turns on or off shall not exceed the maximum flow rate for a lavatory faucet.

[2] Sprayheads with collectively controlled orifices and manual controls.

The maximum flow rate of a sprayhead that manually turns on or off shall be the product of (a) the maximum flow rate for a lavatory faucet and (b) the number of component lavatories (rim space of the lavatory in inches (millimeters) divided by 20 inches (508 millimeters)).

[3] Sprayheads with independently controlled orifices and metered controls.

The maximum flow rate of each orifice that delivers a preset volume of water before gradually shutting itself off shall not exceed the maximum flow rate for a metering faucet.

[4] Sprayheads with collectively-controlled orifices and metered controls.

The maximum flow rate of a sprayhead that delivers a preset volume of water before gradually shutting itself off shall be the product of (a) the maximum flow rate for a metering faucet and (b) the number of component lavatories (rim space of the lavatory in inches (millimeters) divided by 20 inches (508 millimeters)).

(p) *Showerheads.* The maximum water use allowed for any showerheads manufactured after January 1, 1994, shall be 2.5 gallons per minute (9.5 liters per minute) when measured at a flowing pressure of 80 pounds per square inch gage (552 kilopascals). Any such showerhead shall also meet the requirements of ASME/ANSI Standard A112.18.1M–1996, 7.4.4(a).

(q) *Water closets.* (1) The maximum water use allowed in gallons per flush for any of the following water closets manufactured after January 1, 1994, shall be as follows:

Water closet type	Maximum flush rate (gpf (Lpf))
Gravity tank-type toilets	1.6 (6.0)
Flushometer tank toilets	1.6 (6.0)
Electromechanical hydraulic toilets	1.6 (6.0)
Blowout toilets	3.5 (13.2)

(2) The maximum water use allowed for flushometer valve toilets, other than blowout toilets, manufactured after January 1, 1997, shall be 1.6 gallons per flush (6.0 liters per flush).

(r) *Urinals.* The maximum water use allowed for any urinals manufactured after January 1, 1994, shall be 1.0 gallons per flush (3.8 liters per flush). The maximum water use allowed for a trough-type urinal shall be the product of:

(1) The maximum flow rate for a urinal and

(2) The length of the trough-type urinal in inches (millimeter) divided by 16 inches (406 millimeters).

[54 FR 6077, Feb. 7, 1989, as amended at 54 FR 47943, Nov. 17, 1989; 55 FR 42177, Oct. 17, 1990; 56 FR 22279, May 14, 1991; 56 FR 24333, May 30, 1991; 59 FR 49475, Sept. 28, 1994; 63 FR 13317, Mar. 18, 1998; 63 FR 48057, Sept. 8, 1998]

EFFECTIVE DATE NOTE 1: At 62 FR 23116, Apr. 28, 1997, § 430.32 was amended by revising paragraph (a), effective July 1, 2001. For the convenience of the user, the revised text follows.

§ 430.32 Energy conservation standards and effective dates.

* * * * *

(a) *Refrigerators/refrigerator-freezers/freezers.* These standards do not apply to refrigerators and refrigerator-freezers with total refrigerated volume exceeding 39 cubic feet (1104 liters) or freezers with total refrigerated volume exceeding 30 cubic feet (850 liters).

Product class	Energy standards equations for maximum energy use (kWh/yr)	
	Effective January 1, 1993	Effective July 1, 2001
1. Refrigerators and Refrigerator-freezers with manual defrost	13.5AV+299	8.82AV+248.4
	0.48av+299	0.31av+248.4
2. Refrigerator-Freezer—partial automatic defrost	10.4AV+398	8.82AV+248.4
	0.37av+398	0.31av+248.4
3. Refrigerator-Freezers—automatic defrost with top-mounted freezer without through-the-door ice service and all-refrigerators—automatic defrost	16.0AV+355	9.80AV+276.0
	0.57av+355	0.35av+276.0
4. Refrigerator-Freezers—automatic defrost with side-mounted freezer without through-the-door ice service	11.8AV+501	4.91AV+507.5
	0.42AV+501	0.17av+507.5
5. Refrigerator-Freezers—automatic defrost with bottom-mounted freezer without through-the-door ice service	16.5AV+367	4.60AV+459.0
	0.58av+367	0.16av+459.0
6. Refrigerator-Freezers—automatic defrost with top-mounted freezer with through-the-door ice service	17.6AV+391	10.20AV+356.0
	0.62av+391	0.36av+356.0
7. Refrigerator-Freezers—automatic defrost with side-mounted freezer with through-the-door ice service	16.3AV+527	10.10AV+406.0
	0.58av+527	0.36av+406.0
8. Upright Freezers with Manual Defrost	10.3AV+264	7.55AV+258.3
	0.36av+264	0.27av+258.3
9. Upright Freezers with Automatic Defrost	14.9AV+391	12.43AV+326.1
	0.53av+391	0.44av+326.1
10. Chest Freezers and all other Freezers except Compact Freezers	11.0AV+160	9.88AV+143.7
	0.39av+160	0.35av+143.7
11. Compact Refrigerators and Refrigerator-Freezers with Manual Defrost	13.5AV+299[a]	10.70AV+299.0
	0.48av+299[a]	0.38av+299.0
12. Compact Refrigerator-Freezer—partial automatic defrost	10.4AV+398[a]	7.00AV+398.0
	0.37av+398[a]	0.25av+398.0
13. Compact Refrigerator-Freezers—automatic defrost with top-mounted freezer and compact all-refrigerators—automatic defrost	16.0AV+355[a]	12.70AV+355.0
	0.57av+355[a]	0.45av+355.0
14. Compact Refrigerator-Freezers—automatic defrost with side-mounted freezer	11.8AV+501[a]	7.60AV+501.0
	0.42[av]+501[a]	0.27av+501.0
15. Compact Refrigerator-Freezers—automatic defrost with bottom-mounted freezer	16.5AV+367[a]	13.10AV+367.0
	0.58av+367[a]	0.46av+367.0
16. Compact Upright Freezers with Manual Defrost	10.3AV+264[a]	9.78AV+250.8
	0.36av+264[a]	0.35av+250.8
17. Compact Upright Freezers with Automatic Defrost	14.9AV+391[a]	11.40AV+391.0
	0.53av+391[a]	0.40av+391.0
18. Compact Chest Freezers	11.0AV+160[a]	10.45AV+152.0
	0.39av+160[a]	0.37av+152.0

AV=Total adjusted volume, expressed in $ft.^3$, as determined in Appendices A1 and B1 of subpart B of this part.
av=Total adjusted volume, expressed in Liters.
[a] Applicable standards for compact refrigerator products manufactured before July 1, 2001. Compact refrigerator products are not separate product categories under the standards effective January 1, 1993.

EFFECTIVE DATE NOTE 2: At 62 FR 50148, Sept. 24, 1997, § 430.32 was amended by revising paragraph (b), effective Oct. 1, 2000. For the convenience of the user, the revised text follows.